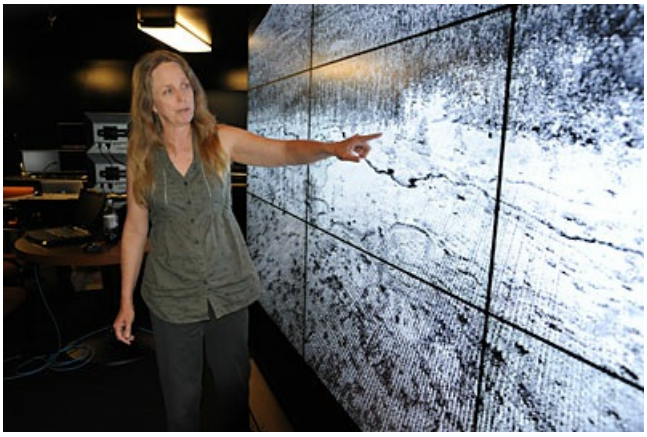

Linda Tedrow brings a light detection and ranging (LiDAR) image of Moscow Mountain to view in 3D.

CAES summer school draws scientists and engineers from industry, academia and national labs

By Kortny Rolston, *INL Communications & Governmental Affairs*

Scientists and engineers from industry, academia and national labs headed back to school this summer to learn how to use two new cutting-edge research tools at the Center for Advanced Energy Studies.

More than 30 students attended the CAES-sponsored courses, one of which focused on 3D visualization using the center's computer-assisted virtual environment (CAVE) and another on materials characterization and analysis using a focused ion beam and a local electrode atom probe in CAES' new Microscopy and Characterization Suite (MaCS).This is the first year CAES has offered the summer courses.

"Both of these capabilities have come online in the last year and we wanted to give researchers the opportunity to access these unique pieces of equipment," said Oren Hester, CAES deputy director. "We operate the CAVE and MaCS as user facilities so scientists and engineers from the CAES partner institutions as well as industry and other entities can use them to solve their problems."

The three-day courses were designed to be hands on. Participants brought their own samples to run in the focused-ion beam and atom probe and their own data to view in the CAVE.

CAES summer school students participate in an atom probe tomography class.

This enticed Linda Tedrow, a University of Idaho technician who processes light detection and ranging (LiDAR), to enroll in the immersive visualization course and bring a LiDAR image of Moscow Mountain to view in 3D.

As the image loaded onto a wall of 3D screens in the CAES visualization laboratory, Tedrow was awed. It was the first time she had seen the image on something larger than a standard computer screen. The detailed view convinced her that the researchers she works with need to embrace advanced visualization technology.

"When you look at it like this, the data all starts to make sense," said Tedrow. "Until now, the only visual I've had is when I look up a location with Google maps to see what it is I'm working on. This gives you a much clearer and insightful perspective."

Hester said exposing researchers to CAES and its capabilities was one of the goals for the courses.

"We want people to better understand how these tools can advance their research, facilitate collaboration between the participants and with CAES, and make the equipment and tools readily available to researchers," he said.

Dustin Ellis, a materials researcher for General Electric, enrolled in the atom probe tomography course after hearing about it from his boss. Much of his work requires the use of an atom probe to examine samples of nickel-based super alloys they are developing for jet engines and other uses.

"Atom probes are one of the few technologies that we can use to look at the grain boundaries of these samples so we can better understand how and why they crack," Ellis said. "That will allow us to design more durable materials that withstand the stress. There is no room for error with these materials."

Ellis had been sending his samples to atom probe labs for examination, but hopes to do it himself in the future, which is another reason he attended the CAES course.

Researchers — even those outside the CAES partner institutions — can become qualified to run the atom probe, focused ion beam and other equipment in MaCS.

"The idea of being able to run my own samples, collect the data and analyzing them is very appealing," Ellis said. "I don't know of any other place

with this equipment that will let me do that. It's very unique."

Hester said CAES will likely offer summer courses again next year.

"The feedback we got from participants was very positive," he said. "We're already thinking about topics for next year."

Feature Archive